

22. The method of Claim 21 wherein the material in the pre-heating space is heated to a temperature of approximately 220°C.

23. The method of Claim 11 wherein the ratio of the rectangular sides is in the range 1:3 to 1:10.

24. A method of Claim 16 wherein the duration is between 15 and 40 minutes.

25. A method of Claim 24 wherein the duration is between 20 and 30 minutes.

26. The method of Claim 17 wherein the duration is approximately 90 minutes.

REMARKS

This patent application presently includes Claims 1-26, of which Claims 1-17 are rejected and Claims 18-26 are newly added. Claims 1-17 are amended to define the applicants' invention more clearly, and all rejections are respectfully traversed.

The examiner objected to the disclosure, owing to the absence of section headings. In response, the applicant has now inserted section headings, as deemed appropriate. The examiner is reminded that the specific section headings set forth in 37 C.F.R. 1.77(b) are not mandatory, but preferred. Accordingly, this objection should now be withdrawn.

Claims 1-17 were rejected as indefinite. One ground for the rejection was the presence of the language "characterized in that." In the claims as amended, the term

"wherein" has been substituted for the preceding language. Accordingly, this is no longer a basis for rejection, and it should be withdrawn.

Claims 1-17 were also rejected as indefinite for including a broad range or limitation together with a narrow range of limitation that falls within the broad range. In each instance, the narrow range has been deleted from the claim and placed into a new, dependent claim. This results in claims which are clear and concise and, accordingly, this rejection under 35 U.S.C. §112 should also be withdrawn.

Claims 1-7 were rejected as anticipated by Al Ghatta et al. U.S. Patent No. 5,714,571. This rejection is respectfully traversed. This reference does teach or suggest the present claims.

For convenience of description, the claims will be discussed making use of the reference characters included in the drawing in order to relate Claim limitations to the preferred embodiment. Reference characters have been included in the claims and in this discussion in order to aid understanding by showing how the claims apply to the preferred embodiment, and for no other purpose. It was not intended to limit the scope of the claims in any manner by making use of reference characters.

In accordance with Claim 1, a device for crystallizing plastic material includes a treatment space (12) and at least one upright partition wall (13) dividing the treatment space into at least two compartments (12', 12'') which are interconnected through a free space (18) at the bottom of the petition, "for conveying the plastic material from one compartment to another." As a result, the plastic material passes in opposite directions in two compartments along a predefined, substantially vertical path (21)."

None of these limitations are met by Al Ghatta. In Al Ghatta, chips enter from the upper left and exit from the lower right, while a gas enters from below and moves upwardly. There are a number of dividing walls creating different compartments within the crystalizer, but all chips can move in only one direction, that is, downwardly between the inlet and outlet. Also, there is not the slightest suggestion of providing a communication opening between compartments near the bottom of a wall, and Al Ghatta could not realize the sort of two directional movement defined by the claim. Accordingly, Al Ghatta could not teach or suggest the invention of Claim 1. Since Claims 2-7 depend from Claim 1, the subject matter of those claims could also not be taught or suggested by Al Ghatta. Accordingly, Claims 1-7 are allowable over Al Ghatta.

Claims 1-17 were also rejected on grounds of obviousness-type double patenting over the assignee's own U.S. Patent No. 5,797,989 (Geissbuehler et al.). This rejection is respectfully traversed. Geissbuehler does not teach or suggest the presently claimed invention.


Reference is made to the same features of Claim 1 discussed above. Geissbuehler does not teach or suggest a crystallizer containing an upright wall which defines at least two internal compartments. Accordingly, Geissbuehler also does not teach or suggest the free space near the bottom of the partition wall which allows the plastic material to move between the compartments, and also does not permit the plastic material to pass in opposite directions in the two compartments along a substantially vertical path. Accordingly, Claim 1 would not be obvious over Geissbuehler and the double patenting

rejection is therefore inappropriate and should be withdrawn. In other words, Claim 1 is patentable over Geissbuehler.

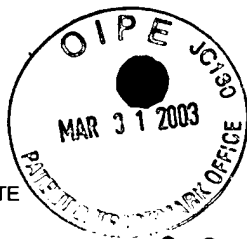
The remaining claims remain dependent from 1 and are believed to be allowable, based upon their dependence from an allowable claim. However, these claims also define additional features not taught or suggested by Geissbuehler and they are also believed to be allowable on their own merits.

Applicant's attorney has made every effort to place this patent application in condition for allowance. It is therefore earnestly requested that this application, as a whole, receive favorable reconsideration and that all of the claims be allowed as presently constituted. Should there remain any unanswered questions, the examiner is requested to call the applicant's undersigned attorney at the telephone number given below.

Respectfully submitted,


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PATENT TRADEMARK OFFICE

Docket No.: 3463/0J445

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Camille BORER ET AL.

Serial No: 09/910,435

Group Art Unit: 1711

Filed: July 20, 2001

Examiner: Patricia Hampton Hightower

Confirmation No.: 2735

For: DEVICE AND METHOD FOR TREATING PLASTIC MATERIAL

AMENDMENT MARK-UP SHEET FOR AMENDMENT RESPONSIVE TO
OFFICE ACTION OF OCTOBER 30, 2002

Commissioner of Patents and Trademarks
Washington DC 20231

In the Description:

BACKGROUND OF THE INVENTION

Field of The Invention

The invention relates to a device [according to the precharacterising portion of claim 1] for crystallizing plastic material as well as to a method [with the characteristics of the precharacterising portion of claim 8] for treating plastic material.

Description of Related Art and Summary of The Invention

Page 2, please rewrite the second full paragraph to read as follows:

From these findings, the device of the invention [characterising portion of claim 1] was developed which results in a compact and economical design which at the same time results in minimal heat loss. The small heat losses also result in the conditions of crystallisation being better able to be kept under control, so that from this point of view too, there is no compulsion to apply high treatment temperatures. There are above all advantages in that the gas throughput for the compartments from a single gas source can be smaller than was the case so far and in that the overall height of the device itself can be kept lower, thus resulting in savings of space and cost. While a crystalliser with a rotation-symmetrical housing is known from CH-A-665 473, it is not designed or suitable for carrying out precrystallisation and crystallisation, i.e. it requires an additional device for a separate crystallisation step.

In the Claims:

Please rewrite Claims 1-17 to read as follows:

1. (Amended) A device for crystallising plastic material, in particular polyethylene terephthalate, comprising a treatment space (12) for accommodating the plastic material in the shape of pieces or pellets, said treatment space (12) being able to be charged with plastic material via at least one feed aperture (14) and discharged by at least one discharge aperture (19); a feed device (15) for a treatment gas via a floor region (16) of the treatment space (12) and at least one upright partition wall (13) provided in the treatment space (12) for dividing the treatment space (12) into at least two compartments (12', 12'') which are interconnected via a free space (18) near a bottom of said partition for conveying the plastic material from one compartment (12', 12'') to [the] another compartment (12', 12'') so that from the feed aperture (14) to the discharge aperture (19) the plastic material passes in opposite directions in two compartments along a predefined, [essentially] substantially vertical path (21); [characterised in that] wherein the two compartments (12', 12'') are provided in [particular by way of sectors, in a mutual,] an at least approximately [rotation] rotationally-symmetrical housing (11).

2. (Amended) A device according to claim 1, [characterised in that] wherein due to the arrangement of free space or the free spaces [or free spaces] (18) and the discharge opening (19)[,] in [each instance] the path (21) at different levels, [in longitudinal cross-section] the path zigzags or meanders through the treatment space.

3. (Amended) A device according to claim 1 or 2, [characterised in that] wherein at least one free space (18) is provided at the bottom of the associated partition wall (13), and that [preferably] the discharge aperture (19) is provided [at the] near a top of the subsequent compartment (12").

4. (Twice Amended) A device according to claims 1 or 2, [characterised in that] wherein a partition wall (13) is provided below the feed aperture (14), for deflecting the incoming plastic material by means of a funnel section (13'), so as to deflect the material to a preceding compartment (12'), thus at least partially covering the subsequent compartment (12") by the funnel section (13').

5. (Twice Amended) A device according to claims 1 or 2, [characterised in that] wherein the first compartment (12') takes up more than half, preferably more than 2/3 of the area in top view of the treatment space (12) which is at least approximately [rotation] rotationally-symmetrical, and that this first compartment (12') is followed by a second compartment (12") which is accordingly smaller.

6. (Twice Amended) A device according to claims 1 or 2, [characterised in that] wherein a monitoring arrangement such as an inspection glass (24) is associated with at least one compartment (12"), [e. g. the last compartment].

7. (Twice Amended) A device according to claims 1 or 2, [characterised in that] wherein the floor region of the treatment space (12) is the perforated floor (16) of a fluidised bed.

8. (Amended) A method for treating plastic material, in particular polyethylene terephthalate, in which the material which has a relatively low temperature is first crystallised during heating before said material is led to heating or condensation in a solid phase, in particular using a device according to [one of the preceding claims] claim 1 wherein [characterised in that] the material is exposed to hot treatment gas for at least 10 minutes in at least two spaces (12', 12'') and thus for crystallisation is heated to a temperature exceeding 135 °C, [e.g. 140-180°C,] and that said material subsequently, in a preheating space (31) comprising up to eight stages, [preferably at least two stages] is heated to a temperature of at least 185°C[, preferably at least 200°C and in particular to approx. 220°C].

9. (Amended) A method according to claim 8, [characterised in that] wherein the hot treatment gas is admitted during crystallisation at a temperature of 165 to 185.degree. C.

10. (Amended) A method according to claim 8 or 9, [characterised in that] wherein for evening out the treatment and thus the product quality, the crystallised material

is brought into the shape of a bulk material stream of four-sided, in particular rectangular cross-section of essentially even bulking across the cross-section, with treatment gas flowing from one side (L) of the four-sided cross-section.

11. (Amended) A method according to claim 10 [characterised in that] wherein the ratio of the rectangular sides (B:L) of the cross-section of the bulk material stream is approximately 1:2 to 1:15[,preferably ranging from 1:3 to 1:10,]with the treatment gas being conducted through the bulk material stream from the larger side of the rectangle (L).

12. (Amended) A method according to claim 10 or 11, [characterised in that] wherein the treatment gas is applied to one side (L) of the four-sided cross-section in at least two stages, each of increased temperature, preferably from the opposite side.

13. (Amended) A method according to claim 12, [characterised in that] wherein the treatment gas is conveyed in reverse flow from a stage (34-37) of lower temperature to a stage (35-38) of higher temperature.

14. (Amended) A method according to claim 12 or 13, [characterised in that] wherein the treatment gas is conveyed, in a zigzagging or meandering way, several

times through the four-sided cross-section of the bulk material in at least three stages (34-37 or 35-38).

15. (Amended) A method according to claim 12 or 13, [characterised in that] wherein the bulk material of four-sided cross-section is conveyed essentially vertically, and that the treatment gas is conveyed essentially horizontally through the four-sided cross-section.

16. (Twice Amended) A method according to one of claims 8, 9, 12 or 13, [characterised in that] wherein precrystallisation and crystallisation are preferably carried out within a duration of 10 to 80 minutes, [preferably 15 to 40 minutes, in particular within approx. 20 to 30 minutes].

17. (Twice Amended) A method according to one of claims 8, 9, 12 or 13, [characterised in that] wherein heating following crystallisation, including precondensation, takes place within a duration of 60 to 120 minutes[, in particular approx. 90 minutes].